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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,937	10/17/2001	Jim Allen	UTS-103	4020
28970	7590	04/06/2006	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN LLP			ROBINSON BOYCE, AKIBA K	
1650 TYSONS BOULEVARD			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			3639	
DATE MAILED: 04/06/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/977,937	Applicant(s) ALLEN ET AL.	
	Examiner Akiba K. Robinson-Boyce	Art Unit 3639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-13 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Due to communications filed 10/17/01, the following is a final office action. Claims 1, 4, 5, 6, 7, and 8 have been amended. Claims 1-20 are pending in this application, and are examined on the merits. The previous rejection has been withdrawn and the following reflects the claims as amended. Claim 7 is objected to, claims 9-13 are allowed, and claims 1-6, 8, and 14-20 are rejected as follows.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 2/12/02 and 10/9/02 was has been considered and accepted by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klashinsky et al (US 5,617,086), and further in view of Neeloff (US 3,927,389).

As per claim 1, Klashinsky et al discloses:

a classification loop array installed on a surface of a traveling path of a vehicle, (col. 4, lines 21-29, sensor arrays embedded in the roadway surface, and comprises inductive loop presence detectors);

wherein the classification loop array generates profile information characterizing the vehicle when the vehicle travels over the classification loop array, (col. 4, lines 52-67, the sensor arrays are connected to a programmable roadside controller comprising a microcomputer that processes signals from sensor arrays and determines the number of axles on vehicle, distance between axles, etc, which is vehicle profile information); and

a microprocessor for receiving the profile information, wherein the microprocessor uses the profile information to assign a predefined classification to the vehicle, (col. 5 lines 2-3, microcomputer determines the vehicle class based upon number of axles and their spacings, etc, [vehicle profile information]).

Klashinsky et al does not specifically disclose a payment point; the classification loop array is at a location prior to the payment point; and means for receiving a fare associated with the predefined classification at the payment point, but does disclose the fact that classification of a vehicle is commonly used to calculate the appropriate tariff for the use of a toll road in col. 1, lines 48-50, and also discloses a classification loop array in Col. 4, lines 27-29, where inductive loop presence detectors are disclosed for the classification of vehicles.

However, Neeloff discloses:

a payment point; the classification loop array is at a location prior to the payment point; and means for receiving a fare associated with the predefined classification at the payment point, (Col. 3 lines 1-2, shows a magnetic loop which constitutes the vehicle separating device SV [in Fig. 1], is located before E0, E1, etc., and the vehicle will pass

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SV first, w/ col. 4, lines 35-42, shows that categories are determined before the vehicle passed before the cash desk to pay the sum due, where the payment point is represented by the cash desk, which is located after the vehicle passes E0, in this case, means for receiving is obvious with Neeloff since it is disclosed that the vehicle passes before the cash desk to pay the sum due, and the payment has to be received it the sum is paid). Neeloff discloses this limitation in an analogous art for the purpose of showing that the vehicle is classified prior to paying a sum due.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to place the classification loop array at a location prior or the payment point and receiving a fare associated with the predefined classification with the motivation of classifying the vehicle ahead of time.

As per claim 2, Klashinsky et al discloses:

wherein the profile information represents changes of inductance which can be interpreted to identify one or more of all axle count of the vehicle, an axle spacing of the vehicle, a speed of the vehicle, and a chassis height of the vehicle, (Col. 4, line 66-col. 5, line 2, number of axles, distance between axles, etc. are detected by sensor arrays which can be inductive loop presence detectors as described in col. 4, lines 27-29)

As per claim 3, Klashinsky et al discloses:

further comprising a vehicle library accessible to the microprocessor, wherein the vehicle library comprises the predefined classification, Col. 5, line 67-col. 6, line 2, vehicle classifications stored in memory).

As per claim 4, Klashinsky et al discloses:

wherein the predefined classification is associated with a fare, (abstract, lines 16-20, pre-established vehicles profiles for segregation into particular vehicle class-types for toll charge, w/Col. 1, lines 47-50, shows a system that count sh6e number of ales on a vehicle to enable classification and calculation of toll).

5. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klashinsky et al (US 5,617,086) as applied to claim 1 above, and further in view of Neeloff (US 3,927,389), also applied to claim 1 above, and further in view of Platzman (US 3,705,976).

As per claim 5, neither Klashinsky et al nor Neeloff disclose a payment point in communication with the microprocessor, wherein the payment point is adapted to notify an operator of the vehicle of the fare and to receive the fare from the operator, but Klashinsky et al does disclose an example where the number of axles on a vehicle are counted to enable classification and calculation of an appropriate tariff or use of a toll road in col. 1, lines 47-50.

However, Platzman discloses:

a payment point in communication with the microprocessor, wherein the payment point is adapted to notify an operator of the vehicle of the fare and to receive the fare from the operator, (Abstract, lines 1-17, ticket encoded at entering terminal, where the terminal represents the payment point, and wherein once the ticket is decoded, a fee is automatically computed and displayed at the exit terminal, also shows that non-revenue and credit card transactions are accommodated). Platzman discloses this limitation in

an analogous art for the purpose of disclosing a point where payment transactions can be accommodated.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have a payment point in communication with the microprocessor, wherein the payment point is adapted to notify an operator of the vehicle of the fare and to receive the fare from the operator with the motivation of allowing a vehicle to pass through a point where payments for that vehicle can be determined and processed.

As per claim 6, neither Klashinsky et al nor Neeloff disclose a notification device, wherein the notification device is adapted to notify the operator of the fare, but Klashinsky et al does disclose an example where the number of axles on a vehicle are counted to enable classification and calculation of an appropriate tariff or use of a toll road in col. 1, lines 47-50.

However, Platzman discloses:

a notification device, wherein the notification device is adapted to notify the operator of the fare, (abstract, lines 13-14, fee is displayed). Platzman discloses this limitation in an analogous art for the purpose of showing that the fare can be displayed after it is automatically computed.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have a notification device that notifies the operator of the fare with the motivation of informing the operator of the fare that must be paid by a particular vehicle.

Neither Klashinsky et al, Neeloff et al, nor Platzman disclose wherein the location of the classification loop array is between about 65 feet and about 110 feet from the payment point, but Klashinsky et al does disclose an example where the number of axles on a vehicle are counted to enable classification and calculation of an appropriate tariff or use of a toll road in col. 1, lines 47-50. However, this limitation is obvious since this range includes the length of a *typical* tractor-trailer or a tractor-trailer that is towing a double trailer as discussed in applicant's specification, and therefore, this length leaves room for the classification of any type of vehicle at a *typical* classification loop.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention for the location of the classification loop array to be between about 65 feet and about 110 feet from the payment point with the motivation of accommodating any type of vehicle for classification.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klashinsky et al (US 5,617,086) as applied to claim 1 above, and further in view of Neeloff (US 3,927,389), also applied to claim 1 above, and further in view of Waldman et al (US 5,764,163).

As per claim 8, neither Klashinsky et al nor Neeloff disclose a predefined classification listing in sequence of vehicles in queue, wherein the microprocessor dispenses the vehicle's queue in sequence to the operator, but Klashinsky et al does disclose an example where the number of axles on a vehicle are counted to enable classification and calculation of an appropriate tariff or use of a toll road in col. 1, lines 47-50.

However, Waldman et al discloses:

a predefined classification listing in sequence of vehicles in queue, wherein the microprocessor dispenses the vehicle's queue in sequence to the operator, (col. 14, lines 58-59, shows detection of vehicle queues). Waldman et al discloses this limitation in an analogous art for the purpose of allowing a vehicle to be detected in a queue.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have a predefined classification listing in sequence of vehicles in queue where the vehicle's queue is dispensed in sequence with the motivation of classifying vehicles in a pre-determined order.

7. Claims 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hilliard et al (US 6,342,845), and further in view of Platzman (US 3,705,976).

As per claim 14, Hilliard et al discloses:

means for generating initial signature information and wheel assembly information characterizing a vehicle that is moving in a toll lane, wherein each of the initial signature information and the wheel assembly information represents changes of inductance, (Col. 6, lines 25-44, blade-type wire loop used to produce repeatable inductive signatures of a vehicle and cancel most of the incident electromagnetic differential noise to produce);

which can be interpreted to identify one or more of an axle count of the vehicle, an axle spacing of the vehicle, a speed of the vehicle, and a chassis height of the vehicle, (Col. 3, lines 40-54, shows an example where a highway vehicle sensor system utilize loops to detect vehicle speed);

means for assigning a predefined classification to the vehicle based at least in part on the initial signature information and the wheel assembly information, (Col. 7, line 59-Col. 8, line 9, comparing the inductive length-signature to other inductive length-signatures through statistical methods in order to classify or identify the vehicle)

means for queuing more than one vehicles in sequence, (Col. 15, lines 33-37, shows how amplitude sequence is used for classification, w/ Col. 10, lines 60-64, shows positioning the blade sensor is used for estimating the number of vehicles waiting in a lane of traffic, where a queue is no more than a line of waiting people of vehicles);

Hilliard et al fails to disclose the following, but does disclose a system that classifies a vehicle described by the measured inductive signature as shown in the abstract, lines 3-4.

However, Platzman discloses:

means for determining a fare appropriate for the vehicle, (Col. 6, lines 31-37, both the amount of toll and classification of a vehicle printed on a piece of paper); and

means for receiving the fare, (col. 6, lines 42-50, charging toll to driver's account). Platzman discloses this limitation in an analogous art for the purpose of showing how non-revenue and credit authorized transactions are processed.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to associate a fare with a vehicle and to receive the fare from the operator with the motivation of collecting the toll due for a particular vehicle after it has been classified.

As per claim 15, Hilliard et al discloses:

wherein the generating means comprises at least one wheel assembly loop and at least one signature loop, wherein the wheel assembly loop produces the wheel assembly information and the signature loop produces the initial signature information, (col. 6, lines 50-65, shows loop that detects wheel, but then produces signature information, therefore this loop acts as both).

As per claims 16-19, Hilliard et al discloses:

wherein the generating means comprises a left wheel assembly loop and a right wheel assembly loop, wherein the left wheel assembly loop and the right wheel assembly loop are aligned to correspond with a left side and a right side of the vehicle, respectively/wherein the generating means comprises a front signature loop, a pair of wheel assembly loops, and a rear signature loop, wherein the pair of wheel assembly loops are located in between the front signature loop and the rear signature loop/wherein the generating means comprises a front wheel assembly loop, a signature loop, and a rear wheel assembly loop, wherein the signature loop is located in between the front wheel assembly loop and the rear wheel assembly loop/ wherein the generating means comprises a bi-symmetrical offset wheel assembly loop characterized by a left member and a right member, wherein the left member and the right member are aligned to correspond with a left side and a right side of the vehicle, respectively, (Col. 18, lines 28-41, shows that peaks are produced by metal associated with each wheel, shows the driver's/passenger's side front/rear wheel).

As per claims 20, Hilliard et al fails to disclose further comprising means for verifying a presence of the vehicle at a payment point along the toll lane but does

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disclose a system that classifies a vehicle described by the measured inductive signature as shown in the abstract, lines 3-4.

However, Platzman discloses:

means for verifying a presence of the vehicle at a payment point along the toll lane. (Col. 5, lines 5-18, at entry lane, vehicle is detected). Platzman discloses this limitation in an analogous art for the purpose of showing that the total number of axles is counted as a vehicle passes through the entry lane.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to verify a presence of a vehicle at a payment point along the toll lane with the motivation of identifying a vehicle for which a toll is due.

Allowable Subject Matter

8. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 9-13 are allowed.

Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office Action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

The following is an examiner's statement of reasons for allowance. None of the prior art of record either individually or in combination teach the following:

-an intelligent queue loop in communication with the microprocessor, wherein the intelligent queue loop is adapted to indicate changes in electromagnetic field which can be processed to produce subsequent signature information and wheel assembly information characterizing the vehicle, wherein the subsequent signature information is used to reconfirm the initial signature information to ensure that the vehicle *is in a proper sequence*.

The present invention discloses a vehicle classification system that receives a fare associated with a predefined classification. The first allowable feature of having an intelligent queue loop in communication with the microprocessor, wherein the intelligent queue loop is adapted to indicate changes in electromagnetic field which can be processed to produce subsequent signature information and wheel assembly information characterizing the vehicle, wherein the subsequent signature information is used to reconfirm the initial signature information to ensure that the vehicle *is in a proper sequence* is not disclosed by any prior art reference. The closest prior art, Klashinsky et al (US 5,617,086), discloses a traffic monitoring system with in-road sensor arrays for providing signals in response to a vehicle traversing the sensor arrays for determining the class of a vehicle. The next closest prior art, Platzman, (US 3,705,976), discloses a system for automatically reconciling revenues collected, where the fee is automatically computed according to the vehicle type and distance traveled over a toll road. The next closest prior art, Waldman et al, (US 5,764,163), discloses an apparatus for monitoring a vehicle, where the number of vehicles, the speed and the type of vehicle passing over the roadway is determined. The next closest prior art,

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Hilliard et al, (US 6,342,845), discloses a system and method for measuring the inductive signature a vehicle, thereby classifying the vehicle. In this case, distortions as a result of different velocity and acceleration profiles are removed through a normalization process, independently collected inductive lengths and inductive length signatures (which can reflect a class of vehicles, or variation between different vehicles of the same model, or re-identification of a vehicle) are compared to reference values in order to determine if two data sets constitute a match. Newly recited art, Neeloff (US 3,927,389) discloses a vehicle category indicator, which allows the categories of the vehicles to be determined before the vehicle passes before the cash desk to pay the sum due. However, Klashinsky et al, Platzman, Waldman et al, Hilliard et al, and Neeloff all fail to disclose the feature of having an intelligent queue loop in communication with the microprocessor, wherein the intelligent queue loop is adapted to indicate changes in electromagnetic field which can be processed to produce subsequent signature information and wheel assembly information characterizing the vehicle, wherein the subsequent signature information is used to reconfirm the initial signature information to ensure that the vehicle *is in a proper sequence*. This distinct feature has been added to independent claim 9, and renders it and all claims that depend from it (Claims 10-13) allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

10. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akiba K Robinson-Boyce whose telephone number is 571-272-6734. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

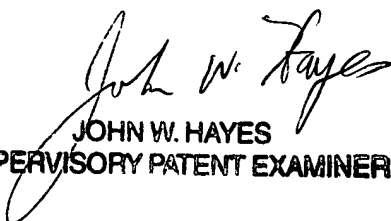
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on 571-272-6708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7238 [After final communications, labeled "Box AF"], 703-746-7239 [Official Communications], and 703-746-7150 [Informal/Draft Communications, labeled "PROPOSED" or "DRAFT"].

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-

3900


A. R. B.
March 23, 2006


JOHN W. HAYES
SUPERVISORY PATENT EXAMINER